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EXAMINER
GEISEL, KARA E

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/670,871	WONG ET AL.	
	Examiner	Art Unit	
	Kara E Geisel	2877	

-- The MAILING DATE of this communication appears on the cover sh et with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) *24 and 25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 September 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-23, drawn to an apparatus and method for screening a compound by monitoring the interactions of said compound with a specimen having fluorophore loaded target cells, classified in class 356, subclass 317.

II. Claim 24, drawn to a system for two-dimensional high-throughput kinetic scanning of a multi-well plate, classified in class 356, subclass 300.

III. Claim 25, drawn to a light source, classified in class 362, subclass 545.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and III are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed as evidenced by independent claims 1, 6, 10, 14, 15, and 22-23. The subcombination has separate utility such as a fluorescent light source for a colorimeter.

Inventions II and III are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed as evidenced by independent claim 24. The subcombination has separate utility such as a fluorescent light source for a colorimeter.

Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed as evidenced by independent claim 1. The subcombination has separate utility such as a scanning system for an analyzer that does not measure fluorescence.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Martin Katz on June 3, 2004 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-23. Affirmation of this election must be made by applicant in replying to this Office action. Claims 24-25 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Drawings

The drawings are objected to because the numbers in fig. 2 are hard to read. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 6 and 22 are objected to because of the following informalities: minor typographical error.

In regards to claim 6, line 11, "and" is repeated.

In regards to claim 22, line 2, "compund" is misspelled.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 2, and 16-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2, and 16-17 recite the limitation "said laser beam light source" in line 2. There is insufficient antecedent basis for this limitation in these claims.

Claim 2 recites the limitation "said first laser beam light source" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the

international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, and 15-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Oshida et al. (US Pub 2002/00140933).

In regards to claims 1 and 15, Oshida discloses an apparatus and method for screening a compound (fig. 1) by monitoring the interactions of the compound with a specimen having fluorophore loaded target cells (page 1, ¶ 2), comprising an optical illumination unit comprising at least two light sources (fig. 1, 21 and 22, and page 2, ¶ 31), wherein light from the at least two light sources is directed to illuminate the specimen (fig. 1, sample on sample board 5), a fluorescence separation unit (fig. 13) coupled to receive emitted light from the specimen and separate at least three emitted wavelengths of light from the emitted light (page 5, ¶s 53-54), and a fluorescence detection unit (fig. 13, 1011-1013) coupled to the fluorescence separation unit to count photons emitted by the at least three wavelengths of emitted light (page 1, ¶ 10).

In regards to claim 2, the optical illumination unit further comprises a light-processing unit coupled to the light sources, the light processing circuit altering the qualities of a light beam from the first light source (page 4, ¶ 43).

In regards to claim 3, the apparatus further comprises at least two dichroic mirrors coupled to the optical illumination unit (fig. 1, 31-34).

In regards to claim 4, the fluorescence separation unit further comprises at least three dichroic polarizer-analyzers (fig. 1, 31-34 and fig. 13, 1231-1232) and at least three band-limited interference filters (fig. 13, 1241-1243).

In regards to claim 5, the apparatus further comprises at least three photodetectors coupled to receive the at least three wavelengths of emitted light (fig. 13, 1011-1013).

In regards to claim 16, the method further comprises a step of filtering light from the light sources (page 3, ¶ 33).

In regards to claim 17, the method further comprises a step of expanding light from the light sources (page 4, ¶s 42-43).

In regards to claim 18, the method further comprises a step of focusing light from the first and second light source on the specimen (fig. 2, 24 and page 2, ¶ 31).

In regards to claim 19, the method further comprises a step of filtering the first, second and third wavelengths of light (fig. 13, 1241-1243 and page 5, ¶ 53).

In regards to claim 20, the method further comprises a step of generating a count of photons from the first, second, and third wavelengths of light (page 1, ¶ 10).

In regards to claim 21, the method further comprises a step of generating a response profile of the target cells (page 2, ¶15).

Claim 23 is rejected under 35 U.S.C. 102(b) as being anticipated by Zarling et al. (USPN 5,736,410).

In regards to claim 23, Zarling discloses a method for identifying a pharmaceutically active compound (column 7, lines 26-38 and column 11, lines 14-28) comprising interacting a compound with a specimen (column 10, lines 37-54) containing at least three chemicals of interest (column 35, lines 41-53), and simultaneously detecting the activities of the at least three chemicals from optical signals emitted from the specimen (columns 35-36, lines 41-67 and 1-19 respectively).

Claims 1-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Mao et al. (US Pub 2003/0228566).

The applied reference has a common inventor (Lid Wong) with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived

from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

In regards to claims 1 and 15, Mao discloses an apparatus and method for screening a compound (fig. 2) by monitoring the interactions of the compound with a specimen having fluorophore loaded target cells (page 2, ¶ 22), comprising an optical illumination unit comprising at least two light sources (fig. 2, 102, 108), wherein light from the at least two light sources is directed to illuminate the specimen (fig. 2, 114), a fluorescence separation unit (fig. 2, 118) coupled to receive emitted light from the specimen and separate at least three emitted wavelengths of light from the emitted light (page 3, ¶ 27), and a fluorescence detection unit (fig. 2, 128) coupled to the fluorescence separation unit to count photons emitted by the at least three wavelengths of emitted light (page 3, ¶ 27).

In regards to claim 2, the optical illumination unit further comprises a light-processing unit coupled to the light sources, the light processing circuit altering the qualities of a light beam from the first light source (page 3, ¶ 29).

In regards to claim 3, the apparatus further comprises at least two dichroic mirrors coupled to the optical illumination unit (fig. 2, 210, 214).

In regards to claim 4, the fluorescence separation unit further comprises at least three dichroic polarizer-analyzers (fig. 2, 230, 246, 252) and at least three band-limited interference filters (fig. 2, 234, 250, 256).

In regards to claim 5, the apparatus further comprises at least three photodetectors coupled to receive the at least three wavelengths of emitted light (fig. 2, 260, 264, 268).

In regards to claim 6, Mao discloses an apparatus for screening a compound (fig. 2) by monitoring the interactions of the compound with a specimen having fluorophore-loaded target cells (page 2, ¶ 22), comprising an optical illumination unit comprising at least two light sources (fig. 2, 104, 108), which generate polarized light (page 4, ¶ 33), a plurality of filters coupled to

the optical illumination unit to coaxially illuminate the specimen (fig. 2, 210, 214), a fluorescence separation unit comprising at least two filters (fig. 2, 224, 240) to direct and separate at least three emitted wavelengths of light from the light emitted from the specimen and couple each wavelength of light of the at least three emitted wavelengths of light to a separate dichroic polarizer analyzer (fig. 2, 230, 246, 252), and a fluorescence detection unit comprising at least three detectors (fig. 2, 260, 264, 268), each of the detectors comprising a photo-detector.

In regards to claim 7, the apparatus further comprises a light-processing unit coupled to a laser beam light source for altering the qualities of a light beam from the laser beam light source (page 3, ¶ 29).

In regards to claim 8, the apparatus further comprises an inverted microscope coupled to receive light emitted from the specimen (fig. 2).

In regards to claim 9, the apparatus further comprises a computer coupled to the fluorescence detection unit (fig. 2, 136).

In regards to claim 10, Mao discloses an apparatus for screening a compound (fig. 2) by monitoring its interactions with a specimen having fluorophore-loaded target cells(page 2, ¶ 22), comprising a first light source (fig. 2, 104), a second light source (fig. 2, 108), a first dichroic mirror coupled to receive light from the first light source and second light source (fig. 2, 210), a second dichroic mirror coupled to receive light from the first light source which is passed by the first mirror and coupled to receive light from the second light source which is deflected by the first mirror (fig. 2, 214), and second mirror being couple to deflect light from the first and second light source to the specimen (fig. 2, 114) and pass light emitted from the specimen (fig. 2, 220), a third dichroic mirror that deflects a first wavelength of light from the light emitted from the specimen (fig. 2, 224), a fourth dichroic mirror that deflects a second wavelength of light from the light emitted form the specimen and passes a third wavelength of light from the specimen (fig. 2, 240), at least three dichroic polarizer-analyzers (fig. 2, 230, 246, 252), and at least three band-

limited interference filters (fig. 2, 234, 250, 256), and at least three photodetectors coupled to receive outputs associated with the first, second, and third wavelengths of light (fig. 2, 260, 264, 268).

In regards to claim 11, the apparatus further comprises a light-processing unit (page 3, ¶ 29).

In regards to claim 12, the apparatus further comprises an inverted microscope coupled to receive light emitted from the specimen (fig. 2).

In regards to claim 13, the apparatus further comprises a computer coupled to receive outputs of the at least three photodetectors (fig. 2, 136).

In regards to claims 14 and 22, Mao discloses an apparatus and method for screening a compound (fig. 2) by monitoring its interactions with a specimen having fluorophore-loaded target cells(page 2, ¶ 22) developing a profiled of target cells in a specimen, comprising an argon-ion laser (fig. 2, 104), a xenon light source (fig. 2, 108), a first dichroic mirror coupled to receive light from the argon source and xenon source (fig. 2, 210), a second dichroic mirror coupled to receive light from the argon source which is passed by the first mirror and coupled to receive light from the xenon source which is deflected by the first mirror (fig. 2, 214), and second mirror being couple to deflect light from the argon and xenon light sources to the specimen (fig. 2, 114) and pass light emitted from the specimen (fig. 2, 220), a third dichroic mirror that deflects a first wavelength of light from the light emitted from the specimen (fig. 2, 224), a fourth dichroic mirror that deflects a second wavelength of light from the light emitted form the specimen and passes a third wavelength of light from the specimen (fig. 2, 240), at least three dichroic polarizer-analyzers (fig. 2, 230, 246, 252), and at least three band-limited interference filters (fig. 2, 234, 250, 256), at least three photodetectors coupled to receive outputs associated with the first, second, and third wavelengths of light (fig. 2, 260, 264, 268) and a computer coupled to receive outputs of the three photodetectors (fig. 2, 136).

In regards to claim 16, the method further comprises a step of filtering light from the light sources (fig. 2, 202).

In regards to claim 17, the method further comprises a step of expanding light from the light sources (fig. 5, 506).

In regards to claim 18, the method further comprises a step of focusing light from the first and second light source on the specimen (fig. 5, 512).

In regards to claim 19, the method further comprises a step of filtering the first, second and third wavelengths of light (fig. 5, 522).

In regards to claim 20, the method further comprises a step of generating a count of photons from the first, second, and third wavelengths of light (fig. 5, 528).

In regards to claim 21, the method further comprises a step of generating a response profile of the target cells (fig. 5, 530).

In regards to claim 23, Mao discloses a method for identifying a pharmaceutically active compound (page 1, ¶ 2) comprising interacting a compound with a specimen containing at least three chemicals of interest (page 2, ¶ 22), and simultaneously detecting the activities of the at least three chemicals from optical signals emitted from the specimen (fig. 3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> This application currently names joint inventors. In considering patentability of the

claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 6-9 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshida et al. (US Pub 2002/00140933).

In regards to claim 6, Oshida discloses an apparatus for screening a compound (fig. 1) by monitoring the interactions of the compound with a specimen having fluorophore-loaded target cells (page 1, ¶ 2), comprising an optical illumination unit comprising at least two light sources (fig. 1, 21 and 22, and page 2, ¶ 31), which generate polarized light (page 4, ¶ 43), a plurality of filters coupled to the optical illumination unit to coaxially illuminate the specimen (fig. 4, 31-32), a fluorescence separation unit comprising at least two filters (fig. 4, 31-34) to direct and separate at least two emitted wavelengths of light from the light emitted from the specimen and couple each wavelength of light of the at least two emitted wavelengths of light to a separate dichroic polarizer analyzer (fig. 5, 1212, 1222), and a fluorescence detection unit comprising at least two detectors (page 3, ¶s 36-37), each of the detectors comprising a photo-detector. Oshida does not disclose in this embodiment, that three emitted wavelengths of lights are separated, that the three separate wavelengths are directed each to a separate dichroic polarizer analyzer, or that three detectors are used to measure the three wavelengths. However, this would merely be a duplication of essential working parts to measure three wavelengths, instead of the two described. It would have been obvious to one having ordinary skill in the art at the time the invention was made to add a third dichroic polarizer analyzer, and a third detector, since it has been held that mere duplication of essential working parts of a device involves only routine skill in the art (St. Regis Paper Co. V. Bemis Co., 193 USPQ 8), and this would furthermore, be obvious to one of ordinary skill in the art, in order to measure three distinct wavelengths of interest.

In regards to claim 7, the apparatus further comprises a light-processing unit coupled to a laser beam light source for altering the qualities of a light beam from the laser beam light source (page 4, ¶ 43).

In regards to claim 8, the apparatus further comprises an inverted microscope coupled to receive light emitted from the specimen (fig. 1).

In regards to claim 9, the apparatus further comprises a computer coupled to the fluorescence detection unit (fig. 1, 11-14).

In regards to claim 22, Oshida discloses a method of screening a compound by monitoring the interactions of the compound with a specimen having fluorophore loaded target cells, comprises coupling a first laser to the specimen to illuminate the specimen coupling a second laser to the specimen to co-axially illuminate the specimen, separating at least three wavelengths of light emitted form the fluorophore loaded specimen, detecting photons from the first, second and third wavelengths of light, and generating a response profile of the target cells. While Oshida does not disclose that the two lasers are an argon laser, and a xenon laser, it is very well known in the art that argon laser can be used to excite a specimen at 488nm, while a xenon laser can be used to excite a specimen at 147nm. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a xenon laser and an argon laser in Oshida's device in order to excite the fluorophores in the fluorophore loaded specimen to fluoresce at those wavelengths.

Additional Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art made of record is Simon et al. (USPN 6,462,345), and Wolleschensky et al. (US Pub 2002/0020819).

Simon discloses an apparatus for screening a compound by monitoring its interactions with a specimen having fluorophore-loaded target cells, comprising a first light source, a second

light source, a first dichroic mirror coupled to receive light from the first light source and second light source, a second dichroic mirror coupled to receive light from the first light source which is passed by the first mirror and coupled to receive light from the second light source which is deflected by the first mirror, and second mirror being couple to deflect light from the first and second light source to the specimen and pass light emitted from the specimen, a third dichroic mirror that deflects a first wavelength of light from the light emitted from the specimen, a fourth dichroic mirror that deflects a second wavelength of light from the light emitted form the specimen and passes a third wavelength of light from the specimen, at least three band-limited interference filters, and at least three photodetectors coupled to receive outputs associated with the first, second, and third wavelengths of light in order to count photons emitted by the at least three wavelengths of emitted light.

Wolleschensky discloses an apparatus and method for screening a compound by monitoring the interactions of the compound with a specimen having fluorophore loaded target cells, comprising an optical illumination unit comprising at least two light sources, wherein light from the at least two light sources is directed to illuminate the specimen, a fluorescence separation unit coupled to receive emitted light from the specimen and separate at least three emitted wavelengths of light from the emitted light, and a fluorescence detection unit coupled to the fluorescence separation unit to count photons emitted by the at least three wavelengths of emitted light.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kara E Geisel whose telephone number is **571 272 2416**. The examiner can normally be reached on Monday through Friday, 8am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on **571 272 2415**. The fax phone numbers for the

organization where this application or proceeding is assigned are 703 872 9306 for regular communications and 703 872 9306 for After Final communications. For inquiries of a general nature, the Customer Service fax number is 703 872 9317.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 1782.

F.L. Evans
Primary Examiner
Art Unit 2877

K.G

KEG
June 10, 2004